

# The Proposal Process

Michael H. New, PhD

Deputy Associate Administrator for Research  
Science Mission Directorate  
NASA Headquarters

EMAIL: [michael.h.new@nasa.gov](mailto:michael.h.new@nasa.gov)

TWITTER: [drspacebuzzkill](https://twitter.com/drspacebuzzkill)

# A bit about me

- Currently responsible for ensuring the fairness, efficiency, inclusiveness, and transparency of SMD's scientific competition processes (NRAs and AOs).
- Previously, ran the Exobiology Program for 15 years and served as Lead Discovery Program Scientist for 11 years.
- Started in NASA as a researcher in the origin of life at Ames Research Center, CA.
- PhD in Chemical Physics.
- Born and raised in New York City.
- My pronouns are he/him/his



# Why proposals and peer review?

- It's the least bad system for choosing exciting, relevant, high-quality research to fund
  - ❖ SMD working hard to improve the fairness and inclusivity of the process (e.g., Dual-Anonymous Peer Review, No Due Dates, Codes of Conduct)
- Combines expert knowledge on specific topics with general programmatic direction
- NASA (and the US government in general) is committed to open and fair competition for research and mission funding

# For what does NASA Solicit Proposals?

- For the most part, SMD solicits proposals for *science investigations*.
  - ❖ SMD also solicits for *technology demonstrations*.
- Research-based investigations are usually, although not exclusively, funded through *grants* (Federal domestic assistance).
- Research investigations requiring a large amount of NASA input may be funded through *cooperative agreements*
- Investigations requiring a spaceflight mission are usually funded through *contracts*.
  - ❖ Smallish missions — balloon and sounding rocket payloads, airborne campaigns and CubeSats — may be funded through grants, though.

# How does NASA solicit proposals?

## *Research not needing spaceflight*

### NASA Research Announcements (NRAs)

- Type of Broad Agency Announcement (BAA).
- An NRA is used to solicit unique research programs and/or related activities to achieve NASA's desired objectives. Example: ROSES.
- Usually results in award of *grants*.
  - ❖ No deliverables.
  - ❖ Level of effort tasks.

## *Research needing spaceflight*

### Announcements of Opportunity (AOs)

- Another type of Broad Agency Announcement (BAA).
- An AO is used to solicit science investigations that require a spaceflight mission. Example: Small Explorers
- Results in the award of *contracts*.
- Deliverables include a spacecraft, instruments, data, science results published in journals.

# How do I find out about solicitations?

- NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES)
  - ❖ All SMD solicitations are found on NSPIRES
  - ❖ If you haven't already done so, register on the site. Sign up for the relevant email lists to get announcements of newly released opportunities. Also, please consider completing the demographic survey (despite the Carter-era nature of some of the questions).
  - ❖ <https://nspires.nasaprs.com>
- SAM.gov
  - ❖ This is the official U.S. Government System for: Contract Opportunities (RFPs, AOs), Assistance Listings (NRAs), etc.
- SMD's AO Planning List
  - ❖ Includes hardware- and SmallSat-related NRAs, too.
  - ❖ [https://soma.larc.nasa.gov/StandardAO/doc\\_files/Planning%20List%20for%20SMD%20Solicitations%2020210308-for-publication.docx](https://soma.larc.nasa.gov/StandardAO/doc_files/Planning%20List%20for%20SMD%20Solicitations%2020210308-for-publication.docx)
- NASA Townhalls at national scientific meetings (e.g., AGU, LPSC, DPS) and advisory group meetings (e.g., Astrophysics Advisory Committee, NAS Committee on Solar and Space Physics, NAS Space Studies Board)

# Nuance 1: The Stand-Alone Mission of Opportunity Notice (SALMON)



- “Missions of Opportunity” are a specialized class of spaceflight investigations:
  - ❖ Partner Missions of Opportunity — PMOs are investigations that provide a critical component of a non-NASA or non-U.S. mission
  - ❖ New Missions using Existing Spacecraft — NMESs solicits proposals making use of a NASA spacecraft or other working space asset to conduct an investigation that is not a continuation of the spacecraft’s original mission
  - ❖ Small Complete Missions — SCMs are scientifically valuable investigations that can be realized within the PEA-specific Cost Cap, including the cost of their access to space if not provided by NASA
  - ❖ Focused Missions of Opportunity — FMOs are investigations that address a specific, NASA-identified flight opportunity like instruments for a strategic mission.
- ISS-attached payloads and payloads hosted on non-NASA spacecraft are Missions of Opportunity, too.
- Missions of Opportunity are released as “Program Element Appendices (PEAs)” to the SALMON AO.
  - ❖ Common requirements of all PEAs are in the front sections of the SALMON AO.

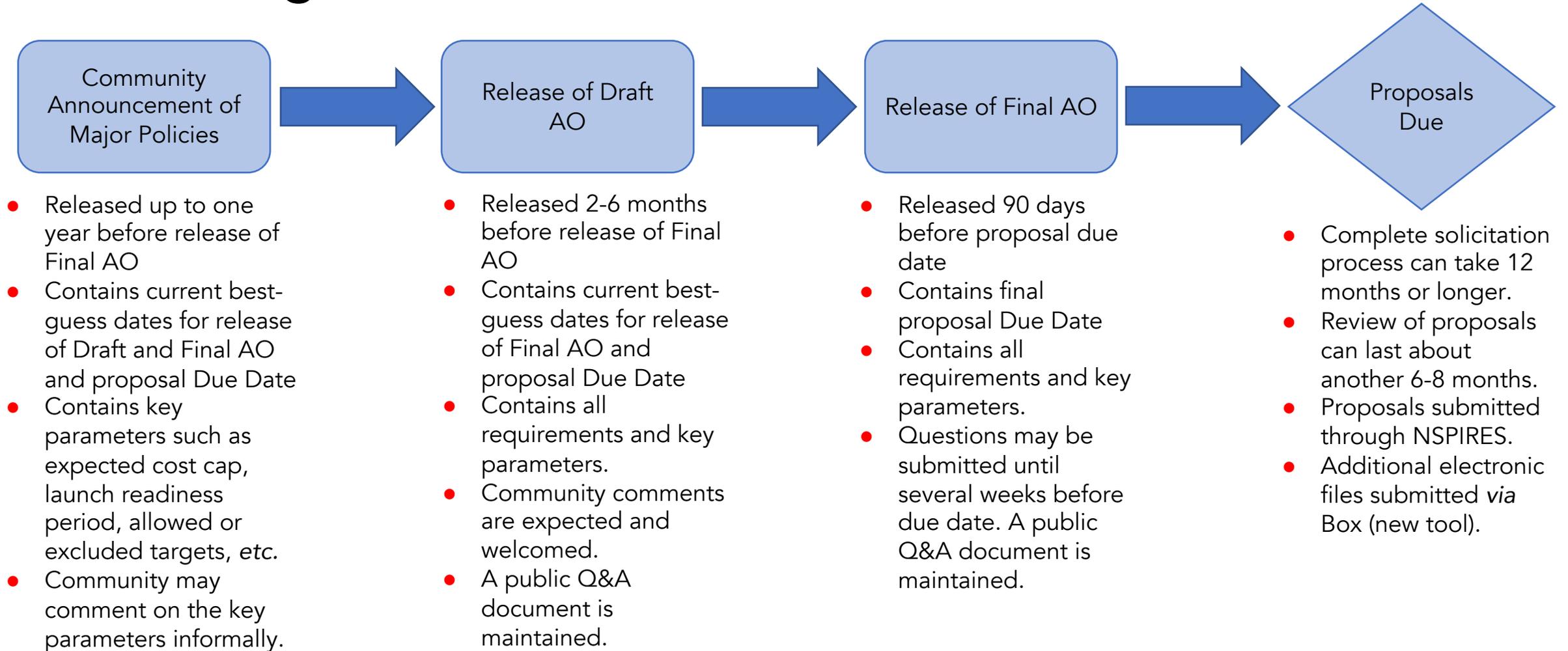
# Nuance 2: Sub-Orbital Class NRAs

- SMD solicits for small missions through Program Elements of ROSES:
  - ❖ In-space Validation of Earth Sciences Technologies (InVEST) — Validates Earth Science technologies that cannot be fully tested on the ground or in airborne systems to reduce the risk of new technologies in future Earth science missions.
  - ❖ Astrophysics Research and Analysis Program (APRA) — Solicits basic research proposals for investigations that are relevant to NASA's programs in astronomy and astrophysics. Includes 1U to 12U CubeSats as well as sounding rockets and stratospheric balloons.
  - ❖ Pioneers — solicits proposals for Astrophysics space and suborbital investigations that are greater in cost, scope and capability than what is possible within APRA but are smaller in cost than what is possible within the Astrophysics Explorers Mission of Opportunity (MO) program. Investigations are solicited that use one or more CubeSats, SmallSats, Major Balloon Missions, and ISS-attached payloads.
  - ❖ Heliophysics Flight Opportunities for Research & Technology (HFORT) — seeks to fund space and sub-orbital science and science-enabling investigations that use SmallSats (including CubeSats), Balloon Missions, and Hosted Rideshare Payloads, such as International Space Station (ISS)-attached payloads.

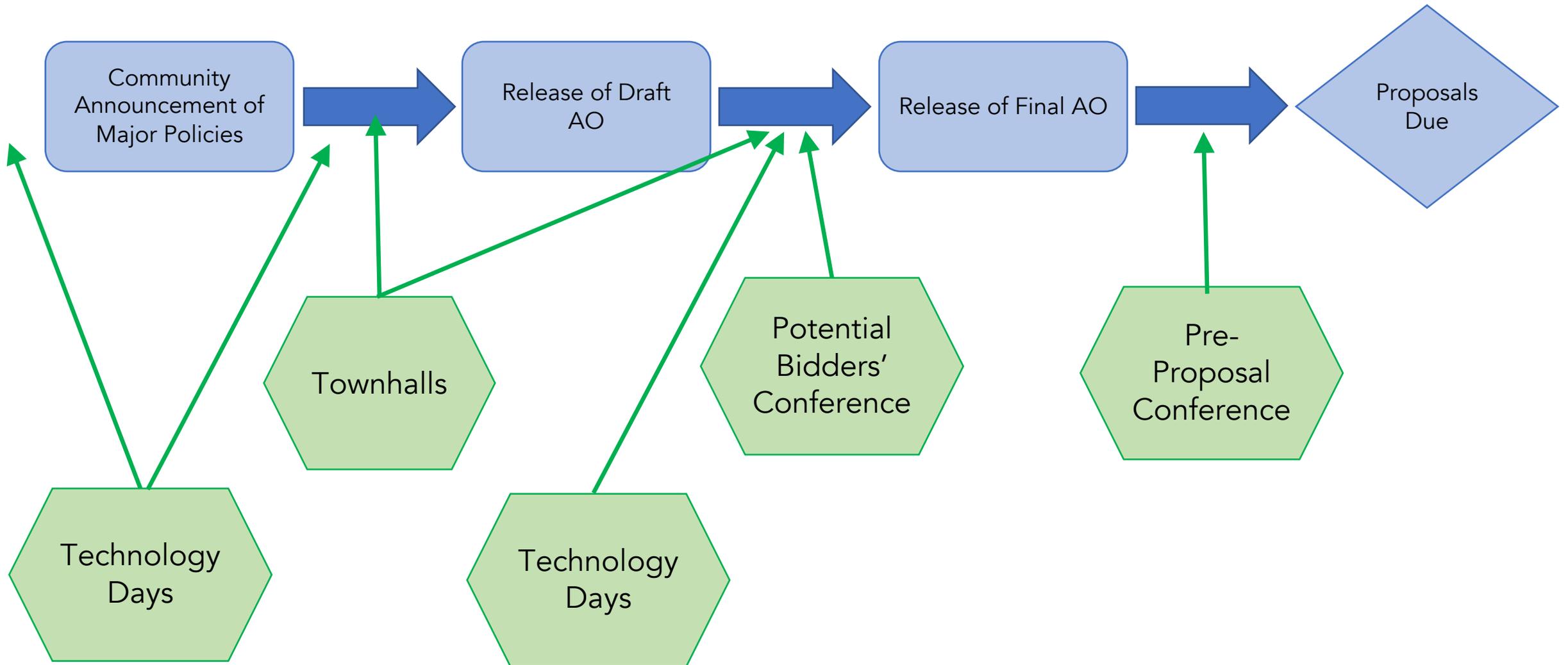
# Three Varieties of AOs

- SALMON PEAs — generally one step: proposals are submitted, evaluated, and then selected for flight. Examples include Earth Venture Instruments, Astrophysics Small Explorer Missions of Opportunity (SMEx MO).
- One-Step AOs — Proposals are submitted for full missions, evaluated, and then selected for flight. Examples include Earth Venture Missions
- Two-Step AOs — Proposals are submitted, evaluated, and then selected for a partially-funded “Concept Study”. After 4-12 months, “Concept Study Reports” are submitted, reviewed and one or more are “down-selected” for flight. Examples include Discovery, Heliophysics Mid-Sized Explorer Missions (MidEx).

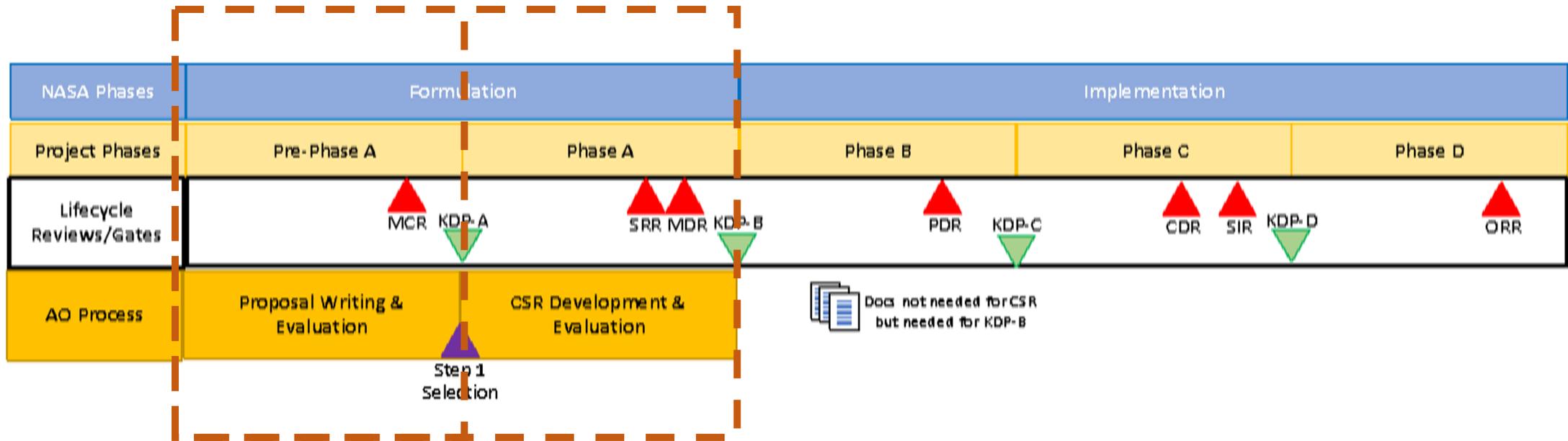
# Life-cycle of an Announcement of Opportunity (including SALMON PEAs)



# Optional Additions to the Life Cycle



# Relationship between AOs and Mission Lifecycles



SALMON Teams  
Two-Step AOs  
One-Step AOs

- NASA's concept of a Project Lifecycle is described in irritating detail in NASA Procedural Requirements (NPR) 7120.5
- All NPRs may be accessed at <https://nodis3.gsfc.nasa.gov>

# What goes on in Step 2?

- For Two-Step AOs, the second step is not considered to be a true “procurement”. This means that NASA can have much more interaction with the Study Teams than it can with proposers (in Step 1).
- A NASA Program Office will work with the selected teams to get Study Contracts in place.
- The Program Officer will offer to debrief the teams on their evaluations.
- The Study Teams will work to add details to their mission concept and address the significant weaknesses found in the original proposal.
- During the Step-2 evaluation, the evaluation team will communicate with the Study Teams, providing them with lists of significant weaknesses, questions, and requests for information.
- Part of the process is an 8-10 hour “site visit” where questions may be asked, directly, and the teams’ dynamics are on display.

**Dr. Tom Wagner will speak  
about the evaluation process.  
Stay tuned.**

**Questions? Comments?  
Amusing anecdotes?**